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ABSTRACT

Despite their limitations, early evaluations of voucher programs provided program operators and evaluation teams with opportunities to learn the problems accompanying the study of school vouchers. Subsequent voucher programs in Dayton (Ohio), New York, and Washington, D.C., were designed to allow for the collection of high-quality information about student test scores and parental assessments of public and private schools. Because scholarships in these cities were awarded by lottery, program evaluations could be designed as randomized field trials. Prior to the lottery, the evaluation team collected baseline data on student test scores and family background characteristics. One year later, the evaluation team retested the students and asked parents about their children's school experiences. This paper reports on the experiences of students and families participating in a privately funded voucher program in Dayton, Ohio. An assessment by parents and students of the program's impact on student achievement and other education and social outcomes is provided. The appendix has three parts: (1) a discussion of the procedures for adjusting weights; (2) tables of characteristics of those who did and did not attend the followup testing sessions and results of logit models used to estimate weights; and (3) full results from equations estimating impacts on test scores. Contains 17 tables. (DFR)

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School Choice in Dayton, Ohio: An Evaluation After One Year

by

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and

Paul E. Peterson

February 2000

Paper prepared for the Conference on Vouchers, Charters and Public Education, sponsored by the Program on Education Policy and Governance, Harvard University, March 2000.

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School Choice in Dayton: An Evaluation After One Year

In the past decade considerable data have been collected on how school vouchers impact low-income families and their children.[1] Just ten years ago, we knew very little. The sum of our understanding of school vouchers was based upon a single experimental public-school choice program attempted in Alum Rock, California during the 1960s.[2] But beginning in 1990, new voucher programs sprouted across the country, in the State of Florida and in such cities as Milwaukee, Cleveland, Indianapolis, San Antonio, and New York City, and, indeed, in a nationally operated scholarship program sponsored by the Children's Scholarship Fund. While state governments currently run three voucher programs (in Wisconsin, Ohio and Florida), private foundations and philanthropists are responsible for much of the growth.

Initial studies of these programs suffered from a number of problems. Planning for the evaluations, for example, usually began after the experiment was already

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[1] The authors wish to thank T. J. Wallace and Mary Lynn Naughton of Parents Advancing Choice in Education for their helpful co-operation with the evaluation. We are also grateful to the many school teachers, principals and other administrators at the many private schools in Washington who assisted in the administration of tests and questionnaires. Chester E. Finn, Bruce V. Manno, Gregg Vanourek and Marci Kanstoroom of the Fordham Foundation, Edward P. St. John of Indiana University, and Thomas Lasley of the University of Dayton provided valuable suggestions throughout various stages of the research design and data collection. We wish to thank especially David Myers of Mathematica Policy Research, who is a principal investigator of the evaluation of the New York School Choice Scholarship Program; his work on the New York evaluation has influenced in many, important ways the design of the Washington evaluation. We thank William McCready, Robin Bebel, Kirk Miller and other members of the staff of the Public Opinion Laboratory at Northern Illinois University for their assistance with data collection, data processing, conduct of the lottery, and preparation of the data for analysis. David Campbell and Martin West provided research assistance. Staff assistance was provided by Shelley Weiner and Lilia Halpern.

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[2] R. J. Bridge and J. Blackman, *A Study of Alternatives in American Education: Vol. 4. Family Choice in Education* (Santa Monica, CA: Rand Corporation, 1978); Richard Elmore, "Choice as an Instrument of Pubic Policy: Evidence from Education and Health Care," In W. Clune & J. Witte, eds., *Choice and Control in American Education: Vol. 1. The Theory of Choice and Control in American Education* (New York: Falmer, 1990), pp. 285-318.

underway, making it impossible to gather baseline data or ensure the formation of an appropriate control group. As a result, the quality of the data collected was not as high as researchers would normally prefer.[3]

Despite their limitations, these early evaluations provided program operators and evaluation teams with opportunities to learn the problems and pitfalls accompanying the study of school vouchers. Subsequent voucher programs in Dayton, New York and Washington, D. C. were designed in such a way as to allow for the collection of high-quality information about student test-score outcomes and parental assessments of public and private schools. Because scholarships in these cities were awarded by lottery, program evaluations could be designed as randomized field trials. Prior to the conduct of the lottery, the evaluation team collected baseline data on student test scores and family background characteristics. One year later, the evaluation team again tested the students and asked parents about their children's school experiences.[4]

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[3] Disparate findings have emerged from these studies. For example, one analysis of the Milwaukee choice experiment found test scores gains in reading and math, particularly after students had been enrolled for three or more years, while another study found gains only in math, and a third found gains in neither subject. Jay P. Greene, Paul E. Peterson, and Jiangtao Du, "School Choice in Milwaukee: A Randomized Experiment," in Paul E. Peterson and Bryan C. Hassel, eds., *Learning from School Choice* (Washington, D. C.: Brookings, 1998), pp.335-56; Cecilia Rouse, "Private School Vouchers and Student Achievement: An Evaluation of the Milwaukee Parental Choice Program," Department of Economics, Princeton University, 1997; John F. Witte, "Achievement Effects of the Milwaukee Voucher Program," paper presented at the 1997 annual meeting of the American Economics Association. On the Cleveland program, see Jay P. Greene, William G. Howell, and Paul E. Peterson, "Lessons from the Cleveland Scholarship Program," in Paul E. Peterson and Bryan C. Hassel, eds., *Learning from School Choice* (Washington, D. C.: Brookings, 1998), pp. 357-92; Kim K. Metcalf, William J. Boone, Frances K. Stage, Todd L. Chilton, Patty Muller, and Polly Tait, "A Comparative Evaluation of the Cleveland Scholarship and Tutoring Grant Program: Year One: 1996-97," School of Education, Smith Research Center, Indiana University, March 1998. Greene, Peterson, and Du, 1998 report results from analyses of experimental data; the other studies are based upon analyses of non-experimental data.

[4] Results for Washington are reported in Patrick Wolf,. William G. Howell and Paul E. Peterson, " School Choice in Washington, DC: An Evaluation after One Year," Paper prepared for the Conference on Charters, Vouchers and Public Education, March 2000, sponsored by the Program on Education Policy and Governance, Kennedy School of Government, Harvard University, Cambridge, MA 02138. Website address: http://data.fas.harvard.edu/pepg/. For New York City results, see Paul E. Peterson, David E. Myers, William G. Howell, and Daniel P. Mayer, "The Effects of School Choice in New York City," in

Results from the evaluations in New York City and Washington, D. C. have been reported elsewhere.[5] This paper reports on the experiences of students and families participating in a privately funded voucher program in Dayton, Ohio after one year's involvement. An assessment of the program's impact on student achievement and other education and social outcomes, as reported by parents and students, is provided.

PACE Program in Dayton, Ohio

In the spring of 1998, Parents Advancing Choice in Education (PACE), a privately funded non-profit corporation, offered low-income families in Montgomery County, Ohio within the Dayton metropolitan area an opportunity to win a scholarship to help defray the costs to attend the school of their choice. Eligible applicants participated in a lottery in which winners were offered a scholarship that could be used at participating private and public schools in Dayton and in other parts of Montgomery County, Ohio. Students entering kindergarten through twelfth grade qualified. For the 1998-99 school year, PACE offered scholarships to 515 students who were in public schools and 250 students who were already enrolled in private schools.

The program was announced in January 1998. Approximately 32,000 students met the program's income and eligibility requirements. Interested families were asked to call PACE, which took preliminary applications from over 3,000 students, about 10 percent of the eligible population. PACE asked applicants to attend sessions where administrators verified their eligibility for a scholarship, students took the Iowa Test of Basic Skills (ITBS), and parents completed questionnaires. Over 1,500 applicants

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Susan B. Mayer and Paul E. Peterson, *Earning and Learning: How Schools Matter* (Washington, D. C.: Brookings, 1999), Ch. 12.

[5] See previous note.

attended these verification sessions in February, March and April 1998. The lottery was then held on April 29, 1998.

During the year of the evaluation the PACE scholarships covered 50 percent of tuition at a private school, except that awards were capped at $1,200. Support was guaranteed for eligible students for at least four years; in addition, the program expects to support students through the completion of high school, provided funds remain available. Scholarship amounts were increased beginning in 1999 as a result of increased funds available to PACE and support for the program by the Children's Scholarship Fund, a nationwide school-choice scholarship program.

Among the public school population who were offered a scholarship, 54 percent took the scholarship and made use of it to attend a private school. In the program's first year, thirty-three schools accepted students who had not previously been attending a private school; 201 of these students attended twelve Roman Catholic schools, 14 attended a Lutheran school, 34 attended three Christian schools, and 14 attended four secular, non-public schools.[6]

Evaluation Procedures

The evaluation procedures that were utilized conform to those in randomized experiments. The evaluation team collected baseline data prior to the lottery, administered the lottery and then collected follow-up information one year later. This section summarizes each of the steps in the data collection effort.

Collection of Baseline Data

During the eligibility verification sessions, students took the ITBS in reading and mathematics. (Students in kindergarten applying for a scholarship for first grade were

exempted from this requirement.) The sessions took place on Saturdays during February, March and April 1998 and generally lasted about two hours. The sessions were held at private schools, where students could take tests in a classroom setting. Private school teachers and administrators served as proctors under the overall supervision of the evaluation team and program sponsors. Tests were scored by Riverside Publishing, the producer of the ITBS.[7] Students in grades four through eight also completed a short questionnaire inquiring about their school experiences.

While children were being tested, adults accompanying them filled out surveys that asked about their satisfaction with their children's schools, their involvement in their children's education, and the parents' demographic characteristics. Parents completed these questionnaires in rooms separate from those used for testing. Administrators explained that responses to the questionnaire would be held in strict confidence and would be used for statistical purposes only. Respondents had plenty of time to complete their surveys. Administrators were available to answer questions about the meaning of particular items.

Anticipating that a variety of people might accompany the children, questions were designed in such a way as to allow any caretaker familiar with the child's family and school experiences to respond to them. Although grandmothers and other relatives and guardians occasionally attended the sessions, parents completed 93 percent of the surveys. The remainder of the report, for ease of presentation, refers to survey responses as those of parents.

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[6] Information provided to the evaluation team by Parents Advancing Choice in Education, January 2000.
[7] The assessment used in this study is Form M of the Iowa Tests of Basic Skills, Copyright c 1996 by The University of Iowa, published by The Riverside Publishing Company, 425 Spring Lake Drive, Itasca, Illinois 60143-2079. All rights reserved.

At baseline, 1,440 students were tested and 1,232 parent questionnaires were completed. Of the 1,440 students, 803 were not at the time attending a private school; of the 1,232 parent questionnaires, parents of students who were not attending a private school completed 690. Follow-up information was obtained only from these students and parents who were not in private schools at the time of application.

The Lottery

The lottery was conducted on April 29, 1998. Winners were informed later that month. If a family was selected, all eligible children in that family were offered a scholarship. In order to ensure that an adequate number of scholarships were given to students not currently attending a private school, separate lotteries were held for students in public and private schools. This procedure also assured random assignment to test and control groups of those families that would participate in the evaluation.

One of the conditions for participating in the lottery was agreement to provide confidential baseline and follow-up information. Although not all parents answered all questions in the surveys at the verification sessions, a high percentage answered most, ensuring that baseline information would be available for nearly all students and parents.

Because scholarships were allocated by a lottery conducted by the evaluation team, those offered scholarships are not expected to differ significantly from members of the control group (those who did not win a scholarship). Baseline data confirm this expectation. There were no statistically significant differences between the demographic characteristics of those offered scholarships and those who were not.[8] However, those

[8] For a more extended discussion of the characteristics of applicants for the Dayton scholarship program, see Paul E. Peterson, Jay P. Greene, William G. Howell and William McCready, "Initial Findings from an Evaluation of School Choice Programs in Dayton, Ohio and Washington, D. C.." Paper prepared under the auspices of the Program on Education Policy and Governance, Harvard University, for presentation before

offered a scholarship scored 6.5 percentile points lower in math and 3.1 points lower in reading than those not offered a scholarship, a statistically significant difference. Follow-up test score results adjust for differences in baseline test scores.

Collection of First-Year Follow-up Information

To estimate the impact on students and families of attending a private school for one year, the evaluation team collected follow-up information in March and April of 1999. The procedures used to obtain follow-up data were essentially the same as those used at baseline, except that data were collected only from students who had not been in private school at the time of the initial scholarship application. Students again took the ITBS in mathematics and reading. Caretakers accompanying the child completed surveys that asked a wide range of questions about the educational experiences of each of their children. Students in grades four through eight also completed a questionnaire that asked them about their experiences at school.

Since students required more time to finish their questionnaire and ITBS tests than parents needed to complete their surveys, time was available for senior staff to conduct recorded but anonymous focus-group sessions with some parents. Participants in the focus groups were selected randomly from those attending the testing sessions; some parents accompanied by small children, however, could not easily participate and other parents chose not to. Parental comments and anecdotes included in this report are taken from transcripts of these focus-group sessions.[9]

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the annual meetings of the Association of Public Policy and Management, New York City, NY October, 1998. The paper is available at http: //data. fas.harvard.edu/pepg/.

[9] Parental comments illustrate findings from the surveys but do not in and of themselves constitute a random sample of parental opinion.

Scholarship recipients were required to participate in the evaluation in order to retain their scholarships for another year. Decliners and members of the control group were both compensated for their expenses and told that they would automatically be included in a new lottery if they attended these follow-up sessions. Fifty-seven percent of the students in the control group and 56 percent of those offered scholarships returned to take the reading and math tests. The Appendix compares the characteristics of participants and non-participants in follow-up sessions.

Data Analysis and Reporting Procedures

Because a lottery was used to award scholarships, it is possible to compare two groups of students that were similar, on average, save the offer of a scholarship. Weighting adjustments have been made in order to account for differential participation rates in follow-up sessions. Weighting procedures are described in the Appendix.

This report provides data that help answer two questions. The first question is as follows:

> How did the *offer* of a PACE scholarship impact a group of low-income scholarship applicants, as measured by test scores and as perceived by applicants and their parents?

This question can be answered straightforwardly by comparing the responses of scholarship winners with the responses of the control group. Because scholarships were awarded at random, significant differences between the two groups can be attributed to the offer.

To compute program impacts on children's test scores, we estimated a statistical model that accounts for students' scholarship or control-group status as well as baseline reading and math test scores. Baseline test scores were used in the analysis to: 1) adjust

for minor baseline differences between the treatment and control groups on the achievement tests; and 2) to increase the precision of the estimated impacts. To compute program impacts on parent and student survey outcomes, the same approach was used, except that results are not adjusted for baseline test scores.

For some policy analysts, this first question is most important: What happens when a school choice program is put into effect? What are the impacts on the population of low-income families interested in a school-choice scholarship? This is similar to a question often asked in medical research: What will happen if a particular pill is marketed? How will the health of potential users be altered, whether or not all patients use the pill as prescribed?

Limiting an analysis to answering simply this question has one important disadvantage, however. It assumes that scholarship usage rates are fixed when in fact they might be highly variable, depending upon the size of the scholarship, the time the scholarship is offered, and the marketing of the program as a whole. Also, if programmatic impacts are substantial, participation rates may fluctuate with the passage of time.

For these reasons, most analysts want an answer to the following question as well:

> What was the impact on low-income students of attending a private school in Montgomery County?

Answering this question provides information about the consequences of actually attending a private school. More exactly, it provides information concerning the difference it makes whether students from low-income, predominantly inner-city families attend a public or a private school. In medical research, the parallel question is: What are the consequences of actually taking a pill, as prescribed?

In six columns, tables 3 to 16 present information on both these questions. Column 1 provides the responses of those offered a PACE scholarship; column 2 provides the responses of those not offered a scholarship; and column 3 estimates the impact of being offered a scholarship. Column 4 then estimates the responses of those who actually attended a private school for one year; column 5 estimates of the responses of the appropriate control group for those who attended private school; and column 6 calculates the impact of attending a private school.

To simplify the presentation, the text of this report will, for the most part, discuss the impact on students and families of *attending* a private school; that is, the responses of those who attended private school and the relevant control group (columns 4 and 5), as well as differences between them (column 6). Readers who are interested primarily in the effect of a scholarship *offer* may wish to examine the first three columns of the accompanying tables.

Response Bias and Meaning of Findings

People tend to overestimate their finer qualities and underestimate less attractive ones. We are more apt to overestimate our smiles than our frowns, our vitamin than our fat intake, our minutes exercising than those spent on the couch.

Students and parents are no different. Students are likely to overestimate the time they spend on homework, and parents are likely to overestimate the frequency with which they volunteer at school. Parents may also view the school their child attends through rose-tinted glasses; after all, few responsible parents are likely to admit to themselves or others that they are sending their child to a terrible school.

The interpretation of data from parental and student surveys needs to account for this very human tendency. No special weight should be placed on the actual frequency with which any particular type of event is said to occur. But if absolute levels may not be estimated accurately, there is no reason to believe that the two groups of parents — scholarship recipients and members of the control group — differ in the accuracy of their reports. After all, individuals were assigned randomly to the two groups, and any reporting bias should be similar for the two groups. For the most part, therefore, this report emphasizes differences between groups rather than the absolute value of responses reported by either scholarship recipients or members of the control group.

An additional qualification is in order. The results of this pilot program may not generalize to a large-scale voucher program that would involve all children in Dayton. Only a small fraction of low-income students in Dayton-area public schools were offered scholarships, and these scholarship students constituted only a small proportion of the students attending private schools in Montgomery County. The impact of a much larger program could conceivably have quite different outcomes.

Still, slightly larger voucher programs directed at low-income families will likely attract families with the greatest interest in exploring an educational alternative, exactly the group that applied for a PACE scholarship. Thus, positive consequences of school choice reported herein may prove encouraging to those who seek to steadily expand school choices for low-income, inner-city families; and negative findings indicate some of the problems associated with doing so. It is hoped that careful research will accompany larger pilot programs established by private philanthropists and public authorities.

Participation in Scholarship Program

An important issue in the school choice debate concerns the ability of different families to take advantage of scholarship programs. School-choice critics often argue that vouchers will only serve parents with pre-existing contacts with private schools, with the financial security to purchase uniforms and pay the additional tuition costs and with the free time to volunteer at their child's school. In the words of educational sociologist Amy Wells, "White and higher-SES [socio-economic status] families will no doubt be in a position to take greater advantage of the educational market."[10] The president of the American Federation of Teachers (AFT), Sandra Feldman, has claimed that vouchers for private schools take "money away from inner city schools so a few selected children can get vouchers to attend private schools, while the majority of equally deserving kids, who remain in the public schools, are ignored."[11] Evaluations of school-choice scholarship programs in Cleveland, New York City, and San Antonio, however, indicate that private schools do admit members of economically and socially disadvantaged groups.[12]

One way to test the skimming hypothesis is to see whether those who take the scholarship offered to them (takers) differ significantly from those who do not take the scholarship (decliners), either because they are unable to identify private-school opportunities as easily or find it more difficult to gain admission or for some other

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[10] Amy Stuart Wells, "African-American Students' View of School Choice," in Fuller and Elmore, eds., *Who Chooses?* p. 47.

[11] Sandra Feldman, "Let's Tell the Truth," *New York Times*, November 2, 1997, p. 7 (Advertisement).

[12] Paul E. Peterson, David Myers, Josh Haimson, and William G. Howell, "Initial Findings from the Evaluation of the New York School Choice Scholarships Program," Occasional Paper, Program on Education Policy and Governance, Taubman Center on State and Local Government, Kennedy School of Government, Harvard University, Cambridge, MA, November 1997; Jay P. Greene, William G. Howell, and Paul E. Peterson, "Lessons from the Cleveland Scholarship Program," in Paul E. Peterson and Bryan C. Hassel., eds., *Learning from School Choice* (Washington, D. C.: Brookings,1998), pp. 357-94. Paul E. Peterson, David Myers and William G. Howell, "An Evaluation of the Horizon Scholarship Program in the

reason. If skimming occurs, then those taking the scholarship should be educationally more advantaged than decliners. But as can be seen in Table 1, in educational respects, the decliners were, if anything, more advantaged than the takers. Initial math scores of the students who took the scholarship were 4 points lower than those who did not make use of the scholarship; initial reading scores did not differ significantly. Nor were members of either group more likely to have a learning disability, a physical disability, or difficulty understanding English. Apparently, the children of those who take the scholarships have a wide range of educational skills and interests, a point that was evident from focus-group conversations. As one mother put it, "My daughter was successful, but she's ... someone that didn't require discipline — she had a good mind to achieve. But my sons, for some reason or another, have a disinterest in school."[13]

Decliners were also more advantaged economically than takers(see Table 2). Mothers of decliners were more likely to be employed full time, and the income of decliner families averaged nearly $3,000 more than the income of taker families. Decliners were also more likely than takers to have been living at the same residence for more than two years and to have been born in the United States. The dependence on welfare of the two groups was similar, as was the likelihood that children were living with both their parents. On the other hand, mothers of takers had ,on average, one-half years more education than decliners did. Also, decliners had slightly larger families – 3.2 members of the household, as compared to 2.8 for the takers. Scholarship takers, were

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Edgewood Independent School District, San Antonio, Texas: The First Year," Occasional Paper, Program on Education Policy and Governance, Harvard University, Cambridge MA, October, 1999.

[13] Focus Group, Morning Session, March 20, 1999, Dayton, Ohio.

more likely to be Catholic, more likely to be say they had no religious affiliation, and less likely to be Protestant or have another religious affiliation.[14]

Selecting a School

School choice advocates say they wish to empower parents by giving them a choice among schools. But critics suggest that parents, especially poor parents, do not usually have enough information to make intelligent choices, and, when given a choice, academic considerations are not paramount. The Carnegie Foundation for the Advancement of Teaching has claimed that "when parents do select another school, academic concerns often are not central to the decision."[15] But Caroline Hoxby has found that parental involvement in schools increases, student achievement rises, more students attend college, and graduates earn more when public schools are in a more competitive context. Also, Schneider et al. show that parents who have definite educational preferences and are given a choice of schools tend to place their kids in schools that reflect those preferences.[16]

These findings may be limited to middle-class families living in suburban areas, and therefore may have little bearing on the educational experiences of low-income families. A Twentieth Century Fund report claims that low-income parents are not "natural 'consumers' of education. . . [Indeed], few parents of any social class appear

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[14] As explained earlier in the text, differences between takers and decliners are taken into account when estimating the effects of the scholarship program. Statistical techniques allow one to estimate the effect of attending a private school while accounting for demographic and other differences between takers and decliners.

[15] Carnegie Foundation for the Advancement of Teaching, School Choice: A Special Report Princeton, New Jersey: Carnegie Foundation for the Advancement of Teaching, 1992), p. 13.

[16] Caroline M. Hoxby, "Analyzing School Choice Reforms Using America's Traditional Forms of Parental Choice," in Peterson and Hassel, eds., p. 144; Mark Schneider, Paul Teske, Michael Mintrom, and Sam Best, "The Empirical Evidence for Citizen Information and a Local Market for Public Goods," American Political Science Review, 89, 1995: 707-709. Also, see Mark Schneider, Paul Teske, Melissa Marschall,

willing to acquire the information necessary to make active and informed educational choices."[17] Similarly, an American Federation of Teachers' report on the Cleveland voucher program suggests that parents sought scholarships, not because of "'failing' public schools" but "for religious reasons or because they already had a sibling attending the same school."

To examine this issue, Dayton parents were asked to identify from a long list the three most important reasons for selecting their child's school. Parents were also given the option of saying their school "was the only choice available." As can be seen in Table 3, the most frequently mentioned reason given by parents of students in private school was academic quality, mentioned by 71 percent of the parents. Religious instruction did play an important role in some parents' decision to send their child to a private school. But so, too, did school discipline and teacher quality, each mentioned by about 45 percent of the private-school parents. Other responses mentioned by more than a fifth of parents included school safety, class size, and what is taught in school. Just 7 percent said child friendships were among the three most important reasons; hardly any mentioned sports.

Over half the parents of students in the control group said that academic quality was one of the top three reasons for their school choice. Teacher quality was the second most frequently mentioned item, a reason given by 40 percent of the public-school parents. About a quarter said the school they "chose" was the only one available, and 13 percent said it was the neighborhood public school.

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and Christine Roch, "Shopping for Schools: In the Land of the Blind, the One-Eyed Parent May be Enough," American Journal of Political Science, 42, 1998: 489-501.

[17] Carol Ascher, Norm Fruchter, and Robert Berne, Hard Lessons: Public Schools and Privatization (New York: Twentieth Century Fund Press, 1996), pp. 40-41.

Obtaining the School of Choice

Still another component of the school-choice debate concerns the access low-income families have to the private sector. School-choice critics often argue that private schools will construct academic and financial barriers to prevent parents from obtaining the school of their choice. In the view of Bruce Fuller and his colleagues, for example, the choice usually belongs to the school, not the parent.[18]

The experiences of the Dayton voucher program should ease some of these concerns. Despite the fact that scholarships were not awarded until late April 1998, just a couple of months prior to the school year's end, nearly 85 percent of those offered a scholarship reported success in finding a school they preferred (Table 4). By comparison, less than half the families in the control group also said their children went to a desired school.

Those offered scholarships who did *not* obtain the school of their choice were asked what the reasons were. Parents were invited to list more than one reason, if they wished; as a result, one should not add together the numbers in Table 4. The most frequently mentioned reason given by parents for not making use of a scholarship offered to them was the remaining cost of private education, a response given by 6 percent of those offered scholarships. Since PACE scholarships in 1998-99 covered only up to one-half the tuition cost, it is not surprising that this turned out to be the most important reason for not entering the desired school. Other reasons mentioned by about 2 percent of the families include: child was turned away, families applied too late, transportation, and the lack of available space in the school. Additional factors, mentioned by less than

[18] Bruce Fuller et al., *School Choice* (Policy Analysis for California Education, University of California, Berkeley and Stanford University, 1999).

2 percent of those offered scholarships, include: family not affiliated with the church sponsoring the school, communication problems, child did not pass the admissions test, the family moved, and the school was inconveniently located.

School Facilities and Programs

Choice critics say that public schools have better facilities and more elaborate programs capable of serving a diverse population.[19] Choice supporters claim that private schools have suitable facilities and do a better job of incorporating all children into a common framework. Facilities and programs depend upon resources available, so it is useful to obtain an estimate of the resources available to public and private schools in Dayton.

Comparisons in the expenditures of public and private schools are difficult to make, because reliable, systematic data on private-school expenditure is not readily available, and because public schools pay for services, such as transportation and school lunch, that may not be provided by private schools. However, rough estimates can be obtained by excluding public expenditure for services not always provided by private schools and by taking into account the fact that private-school expenditure is likely to exceed tuition payments by a predictable amount. When these estimates are made, it appears that public-school expenditure per pupil in Dayton exceeds private-school expenditure by approximately 75 percent.

This estimate is based on the following data and assumptions. The average tuition paid by a scholarship student in the Dayton scholarship program in 1998-99 was

[19] Murphy, Nelson, and Rosenberg, *The Cleveland Voucher Program*.

$2,600.[20] Based on information from a large private-school system in another large city, educational expenditures are estimated to exceed tuition by about 28 percent. If this estimate is correct, then per pupil expenditures in the average school attended by a scholarship student in Dayton averaged about $3,328.[21] Average per pupil costs of the public schools in Dayton was considerably higher—$7,165. However, this figure includes monies for ancillary costs, such as transportation, school lunch, capital costs and central administration, costs not incurred by all private schools. When public-school expenditures for services and programs comparable to those offered in private schools are considered, Dayton public-school per-pupil expenditure in 1995-96, the last year for which reliable information is available, was $5,828. Presumably, per pupil expenditure was higher in 1998-99. But if public-school expenditure remained constant after 1996, the amount spent per pupil was an estimated 75 percent higher than those in the private schools attended by the average scholarship student.

Given these differences in expenditure levels, one would expect to find smaller classes in Dayton public schools.. Inasmuch as smaller classes require more teachers relative to the number of pupils, and inasmuch as the number of teachers in a school is a significant determinant of school costs, it is surprising, in light of the higher expenditure level in Dayton's public schools, that parents reported that public schools had larger

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[20] Information provided to evaluation team by staff of Parents Advancing Choice in Education, December, 1999.

[21] Estimates are based on information about Catholic schools in three boroughs within New York City in an unpublished memorandum submitted to PEPG from the New York archdiocese in August 1999 and from data provided by the U. S. Department of Education, Office of Educational Research and Improvement. National Center for Education Statistics, *Common Core of Data, School Years 1993-94 through 1997-98*. (Washington, D. C.: 2000). Comparable data estimate excludes public-school expenditure for student transportation, food services, enterprise operations, non-elementary/secondary programs, adult education, capital outlay, payments to other school systems, payments to state governments, interest on school system debt, central support for planning research and management services, and unspecified support services.

classes. Parents said public schools, on average, had 25 students in their classrooms, four more than those in public schools.

Perhaps the perception of class size differs from the reality. One group of focus-group parents commented on the different meaning of class size in public and private school settings. Said one mother:

> I was told that [in] private schools, the ratio [of pupils to teachers] is not all that . . . small as I thought it was. That's from what I've been told. But, at the same time, you don't got 90 percent of bad kids. . . . You probably could take thirty kids and put them together. Whereas you put them in public school, thirty kids, seventeen or eighteen of them are bad or don't want to learn. . . . And to me, that's what I'm looking for. I'm looking for my kids to go to school with the majority of good kids, whether they green, black, white or blue.
>
> Another mother: I don't really think it's a [question of] good kids. . . . It was just like something different there when you walk through those doors. Because you're like, like seeing everybody else walking in a straight line. So, after walking crooked you started walking straight too.[22]

Public and private schools chose to allocate resources differently (see Table 5). Nearly all parents of students in public schools said their school had a nurse as compared to 72 percent of private-school parents. Public-school parents were also considerably more likely to say the school had counselors for children — for this item, the differences were quite large, 23 percentage points. They were also more likely to report that their school had a gym. On the other hand, private-school parents were more likely than public-school parents to report that their school had individual tutors, a difference of over 30 percentage points. They were also more likely to report the presence of an after-school program and music program. It is unclear whether the differences in the ways public and private schools spend their money reflect alternative educational priorities or simply the fact that they attend to different populations of students.

According to parents, public schools are larger. As estimated by parents, the average size of the school attended by students in private schools was 260 students, as compared to an average size of 434 for those in public schools. In other words, the impact of attending a private school was to reduce the number of peers by 174 students or by 40 percent (Table 5).

No statistically significant differences in the reports of public and private-school parents were found with respect to the following facilities and programs: computer lab, library, cafeteria, an arts program, and a program for the learning disabled.

Ethnic Composition of School

The degree of racial isolation and inter-racial conflict found in public and private schools has sparked considerable debate. Critics argue that school choice leads to ethnic and racial segregation and the balkanization of society,[23] while some research suggests that the private sector is better integrated than the public sector and that race relations in private schools are more positive.[24]

Evidence from Dayton is mixed. On the one hand, parents report lower levels of racial integration (see Table 6). When asked "what percentage of students in the class were of the same racial background as your child," more parents with children in a private school reported that all the children in the class were of the same racial background — 23 percent for the private school, 5 percent for the public school.

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[22] Focus group, Afternoon Session B, March 20, 1999, Dayton, Ohio.
[23] Michael Kelly, "Dangerous Minds," *New Republic*, December 30, 1996: Amy Guttman, *Democratic Education*; Karl E. Taeuber and David R. James, "Racial Segregation among Public and Private Schools," *Sociology of Education* 55 (April/July 1982), pp. 103-22.
[24] Jay P. Greene, "Civic Values in public and Private Schools," in Peterson and Hassel, eds. *Learning from School Choice*, pp. 83-106.

Parents were also asked, "What percentage of the students in this child's classroom are minority?" When responding to this question, parents were given the option of saying, "less than one-half", "about one-half", "more than one-half, but not everyone", and "everyone." Attending a private school increased the percentage of students in classes that were less than one-half minority — from 30 percent to over 50 percent. But the percentage of parents saying their child was in an all-minority classroom also increased from 5 percent to 14 percent.

On the other hand, racial tolerance seems to be fostered more effectively in private schools. Those parents whose children were in racially mixed classes were asked whether racial conflict was a serious problem at the School. More public-school parents said that it was—30 percent, as compared to 15 percent of the private-school parents.

Special Education

In the debate over school choice, special education has received a good deal of attention. Critics of school choice say that private schools ignore the needs of those with physical and mental disabilities. For example, Laura Rothstein says that "choice programs often operate in a way that is either directly or indirectly exclusionary" of those with disabilities."[25] Defenders of school choice generally admit that private schools lack facilities for students with special needs, but claim that many of those diagnosed as disabled can learn in regular classrooms and that special arrangements can be made for rest.

To explore this issue, parents were asked if their child had physical disabilities, learning disabilities or behavioral problems. In all instances, students who took the

scholarship were no less likely to face such educational challenges than students remaining in public schools (Table 2). Based upon their choice of schools, it does not appear that Dayton families with disabled children believe that public schools are better equipped to address their educational needs – if anything, these findings imply just the opposite.

Parents of students with learning disabilities were asked how well their school addressed their child's needs. Because only a small percentage of families who applied for scholarships had special education needs, the differences between public and private-school parents are not statistically significant (Table 7). These parental reports, however, provide some limited information on how well private schools are addressing the needs of students with special challenges. Nearly half the private-school parents of students with a learning disability reported the school doing very well, as compared to about 40 percent of the public-school parents. When parents said that their child did not understand English, they were asked how well the school addressed their child's needs. All private-school parents claimed the school was doing "very well," as compared to about 85 percent of the public-school parents. Parents of public-school students with physical disabilities, meanwhile, were more likely to say their school was doing "very well" at meeting their child's specific needs.

School Climate

In their study of public and private schools, John Chubb and Terry Moe found that private schools create a more conducive learning environment than public schools do. They point out that public schools are governed by state laws, federal regulations,

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[25] Laura F. Rothstein, "School Choice and Students with Disabilities," in Stephen D. Sugarman and Frank R. Kemerer, eds., *School Choice and Social Controversy*, (Washington, D. C.: Brookings Institution Press,

school board requirements, and union-contract obligations that impose multiple and not always consistent rules on teachers and principals. Because they must respond to numerous legal and contractual requirements, school administrators and teachers focus more on rule-compliance than on educational mission, undermining the morale of educators whose original objective was to help children learn.[26]

The problem, Chubb and Moe say, is particularly prevalent in big city schools, a viewpoint shared by a focus-group parent in Dayton who explained the advantage of attending a Catholic school in these terms:

> The other advantage to Catholic schools that I've seen is . . . they're not governed by the Board of Education.... And there's no [public-school] bureaucracy. If your child needs this service and the [Catholic] school's providing it and it's working, there's one little tiny group that you go to. . . . Well, you try fighting the Board of Education [for the public schools]. I've done it. It can be done, but most of us don't have the energy.[27]

Private schools, operating with greater autonomy, focus more directly on their educational mission and, as a result, achieve a higher degree of internal cohesion, Chubb and Moe say. To do otherwise would jeopardize their ability to recruit new students. As a result, principals and teachers in the private sector enjoy higher morale. Their interactions with one another and with their students are more positive, fostering a more effective learning environment.

Chubb and Moe's findings were based on interviews with teachers and administrators. In this section we examine whether their results are confirmed by reports from Dayton parents.

1999) p. 357.

[26] John E. Chubb and Terry M. Moe, *Politics, Markets and America's Schools* (Washington, D. C.: Brookings Institution Press, 1990).

[27] Focus Group, Afternoon Session B, March 20, 1999, Dayton, Ohio.

The PACE scholarship program had a major impact on the daily life of students at school, if parental reports are accurate. Applicant families whose children went to public schools were more likely to report that students destroying property, tardiness, truancy, fighting, and cheating was a serious problem. For example, over 65 percent of the parents with students in the public-school control group thought fighting was a serious problem at their school, versus only 16 percent of the private-school parents (Table 8). Over 50 percent of public school parents perceived tardiness to be a problem, as compared to just 15 percent for the private-school parents. Over 40 percent of those with a student in public school, but less than 10 percent of the private-school parents, said destruction of property was a serious problem. Similarly, 43 percent of public-school parents, but less than 10 percent of private-school parents, said cheating was a problem.

The focus-group discussions reinforce these findings. One public-school father reported on his wife's experiences as a school volunteer:

> My wife volunteers two days a week at the school. And she tells me some stories. And I'm just like — that stuff wouldn't fly just a few years ago. . . . It's changed a lot since we were there. . . . Lutheran schools – they just wouldn't put up with it. . . . The discipline is a lot greater.[28]

One of the more telling anecdotes related in a focus-group session involved a second-grader:

> Last year one of the little boys in my daughter's class was a trouble maker, was serving after-school detention. And he was just being a little pill.
>
> And I looked at him and I said "Joshua, you're lucky, when I was in second grade – if I would have had detention, I would have had to have written one thousand times, 'I will behave.'" He looked at me and said, "Well, I wouldn't do it."
>
> I said, "Well, my parents were paying three hundred dollars a month to send me to school. . . ." And he looked at me and said, "Yeah, if my Mom was paying three hundred dollars a month, I would have to do what I was told."[29]

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[28] Focus Group Afternoon Session B, March 20, 1999, Dayton, Ohio.
[29] Focus Group Afternoon Session B, March 20, 1999, Dayton, Ohio.

One mother, however, pointed out that not all public schools had these kinds of problems:

> When I go to . . . middle school, they sound like freight trains coming down the hallway. I go to another school, they eat in the classroom. You know, they have pop for class, the teacher's playing CDs on the computers. . . . Then I go to another [public] school. The walls are clean. . . . The kids walk down the hall neatly . . . so . . . the expectations are different.[30]

Public and private schools use different mechanisms to maintain discipline, but the differences are not substantial. Private schools seem to emphasize dress and orderliness; public schools use rules and regulations. More of the private schools, for instance, require students to wear a school uniform. Over 85 percent of the parents of private-school students reported that their school required uniforms, as compared to just over half of the parents in the control group (Table 8). Similarly, virtually all of the private-school parents reported that certain kinds of clothing are forbidden, as compared to over 90 percent of the control group. On the other hand, sign-in sheets and hall passes are more frequently employed by public schools. Ninety-seven percent of the control group reported that parents must sign in when they come to school, as compared to 88 percent of those with students in private school. To leave their class, public-school students must obtain a hall pass, say 77 percent of their parents, as compared to about 60 percent of the private-school parents.

School Expectations and Homework Assignments

Private and public-school parents reported that their children spent similar amounts of time on homework assignments. However, public-school parents were more likely to report that homework assignments were either too easy or too difficult. Private

school parents were also more likely to report that the child's school had high academic expectations—39 percent, as compared to 17 percent for public-school parents. Student reports from public and private schools did not significantly differ from one another.

School-Parent Communications

Parents of students in private schools report higher levels of communications with their school than do parents of students in public school (see table 10). More parents of students in private schools reported:

- that they are notified when their child is sent to the office the first time for disruptive behavior — 91 percent for private school parents, 73 percent for the control group;
- that parents speak to classes about their jobs — 55 and 40 percent;
- that parents participate in instruction — 72 and 42 percent;
- that they receive notes about their child from the teacher — 92 and 76 percent;
- that they receive newsletters about what is going on in school — 96 and 74 percent;
- that regular teacher-parent conferences are held — 98 and 88 percent.

In response to some items, however, no differences between public and private school parents were observed. For example, the two groups of parents reported similar frequencies of attending open houses, receiving report cards at mid-term, joining a parent organization, volunteering, and attending parent-teacher meetings. Also, public-school parents were more likely to discuss school matters with other parents.

In sum, while some parent-communication patterns are similar in public and private schools, overall, the levels of communication between parent and school is more extensive in Dayton's private sector. As one mother observed in a focus-group session, "Everything is at a higher expectation [in private schools]. Even from the parents, they're expecting you ... to come to the school one week a year and volunteer." Or, in the words

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[30] Focus Group Afternoon Session B, March 20, 1999, Dayton, Ohio.

of another, "If you're paying for something, you're going to, of course, be more involved."[31]

One should not attribute these results to initial parental characteristics. Remember, the two groups of parents, separated only by the selection of a lottery, were virtually identical at baseline. Major differences in school-parent communications, therefore, may be attributed to the different relationship between home and school established by the scholarship program.

Religious Practices

The PACE program had a significant impact on students' religious practices. As compared to students in public schools, those in private schools more often said they attended religious services. Over two-thirds of the private-school students, but only about a third of the public-school students, reported attending religious services during the past year (Table 12). The two groups of students, however, claimed that they received the same amount of religious instruction outside of school.

The PACE program did not after one year increase the religious involvement of parents. Mothers of students in private schools actually were less likely to attend religious services than mothers of public-school students. On the other hand, private-school parents were much more satisfied with the religious dimension of their child's schooling.

In addition, it is clear that religion plays an important role in parents' interest in sending their child to a private school. Over 90 percent of the parents in both groups said they would prefer to send their child to a religious private school than a secular private school. Private-school parents base this decision on perceived higher academic standards

[31] Focus group Session B, March 20, 1999, Dayton, Ohio.

in parochial schools, the greater discipline prevalent in religious schools and the daily religious instruction they offer. The same three reasons ranked at the top of the lists of public-school parents, except that religious instruction placed second and the perceived greater discipline at religious institutions placed third.

Parental Involvement in Child's Education

Supporters of school vouchers claim that when parents choose a school, the family becomes more engaged in their child's education. Working together, schools and parents create a more effective educational environment for their children.[32] But choice critics argue that any observed differences in parental engagement with private schools is due to the selected nature of families who apply to voucher programs in the first place.

Because of random assignment to treatment and control groups, this evaluation overcomes circumvents the selection problem. Still, though, after one year there is little evidence that the PACE program increased family engagement in their children's education. Parents were asked how often they helped their child with homework, talked with their child, and accompanied their child to a variety of events, such as school activities, concerts, social gatherings, the library and so forth. In every case public and private-school parents provided essentially the same answers.

Parental Satisfaction

Most studies of school choice have found that low-income parents who use vouchers to attend private schools are more satisfied with various aspects of their school than are public-school parents. Studies of school choice programs in Milwaukee, San

[32] Brandl, *Money and Good Intentions Are Not Enough*.

Antonio, Indianapolis and Cleveland all reach essentially the same conclusion.[33] Some of these results, however, may be due to the select nature of program participants. By virtue of applying for a voucher, parents may have already distinguished themselves as dissatisfied with the public schools. Perceived differences may have more to do with the select nature of voucher applicants than differences between the general populations of private and public-school parents.

Information from Dayton allows fuller consideration of this topic, because it is possible to make comparisons among three groups of parents, 1) parents who recently switched from public to private school; 2) a representative sample of all public-school parents; and 3) public-school parents who have expressed an interest in a voucher. In August 1998, at the beginning of the school year in which the follow-up data were collected, Paragon Opinion Research interviewed a cross-section of Dayton public-school parents and asked them several questions that were very similar to those asked of the parents in the present evaluation.[34] By comparing the satisfaction levels of a cross-section of Dayton public-school parents with those of public-school parents who participated in this evaluation, then, it is possible to assess the distinctiveness of the voucher applicant population.

As can be seen in Table 13A, the results are straightforward. Private-school parents are more enthusiastic about their schools than either public-school parents generally or those public-school parents who applied for a school voucher. When asked to give their school a grade from A to F, 47 percent of the private school students gave

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[33] These results are summarized in Paul E. Peterson, "School Choice: A Report Card," in Peterson and Hassel, eds., *Learning from School Choice*, pp. 17-19.

[34] Anita D. Suda, *Education Reform in the Dayton Area: Public Attitudes and Opinions* (Washington, D. C.: Thomas B. Fordham Foundation, October 1998), pp. 26-28.

their school an "A", as compared to 25 percent of the cross-section of public-school parents and 8 percent of the public-school parents who had applied for a voucher but did not receive one.

We also examined parents' satisfaction with specific dimensions of school life. Parents with children in private schools consistently were more satisfied than the cross-section of Dayton public-school parents, who in turn were more satisfied than the control group. With regard to their school's academic program, 51 percent of the private-school parents, 19 percent of Dayton's public-school parents, and 9 percent of those in public school applying for a scholarship said they were "very satisfied." With respect to school safety, 46 percent of parents with children in private school said they were very satisfied, as compared to just 16 percent of Dayton's public-school parents and 12 percent of the control group. When asked about parental involvement, 40 percent of the private school parents said they were very satisfied, but only 20 percent of the Dayton public-school parents gave this response, and 11 percent of the control group. As for class size, 37 percent of the private-school parents were very satisfied, as compared with 11 percent of the Dayton public-school parents and 9 percent of the control group.

These were the only four dimensions of school life about which Paragon Opinion Research inquired. Our evaluation, however, asked about additional dimensions and the results are much the same (see Table 13B). More private-school parents were "very satisfied" with all of the following dimensions of school life than members of the control group: teaching, school facility, student respect for teachers, teacher communication with parents, the extent to which child can observe religious traditions, parental support for the school, discipline, clarity of school goals, staff teamwork, academic quality, the sports

program and what is taught in school. For example, 52 percent of the scholarship parents expressed the highest satisfaction with "what's taught in school," as compared to 8 percent of the control group. The one exception to this trend concerned parental satisfaction with school location, where no significant differences were detected.

Student Adjustment to Choice Schools

Students in grades 4 through 8 responded to a short questionnaire either prior to or immediately after taking the ITBS in reading and math. The responses to these questions provide an opportunity to assess difficulties that choice students may face when trying to adjust to their new school. On the whole, the transition appeared quite easy for students moving into private schools. Private-school students give their school a higher grade than do the students in the control group — B plus versus B minus. They also are also more likely to report that "teachers really listen to what I have to say" and less likely to report that they "do not feel safe at school." When asked a variety of questions about their self-esteem, no differences between private and public school students were observed.

As one might expect, these students new to private-schools said they had fewer friends than public-school students. Only 38 percent of the private-school students said they had at least eight close friends at school, as compared to 62 percent of public-school students. Most likely, after just one year in new private schools, scholarship students have yet to develop as many friendships as those youngsters who remained in public schools.

Continuing in the Program

All else equal, it is generally thought that students do better the longer they remain in the same school. Does school choice disrupt a child's education? In his evaluation of the Milwaukee school choice program, John Witte expressed concern about the high rate of attrition from private schools.[35] And a number of choice critics have raised questions about the readiness of private schools to expel students who do not "fit in."[36] But studies have found that students from low-income families are more likely to remain in the same school throughout a given school year and from one year to the next.[37]

The PACE program provides an opportunity to examine this question with data from a randomized experiment. In general, the findings suggest that school choice does not destabilize the education of low-income students.

Changing Schools During the School Year

A very high percentage of all students in the study claimed to have remained in the same school the entire year, much higher than is typical of inner-city minority children in general. This may be due to the fact that the families who applied for scholarships were strongly committed to their children's education. As can be seen in Table 15, over 90 percent of both the treatment and control groups report that their child remained in the same school throughout the school year. Similarly, suspension rates are much the same for both groups — about 12 to 13 percent.

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[35] John F. Witte, "First Year Report: Milwaukee Parental Choice Program," University of Wisconsin—Madison, Department of Political Science and Robert M. Lafayette Institute of Public Affairs, November 1991.

[36] Murphy, Nelson, and Rosenberg, *The Cleveland Voucher Program: Who Chooses? Who Gets Chosen? Who Pays??*

[37] Jay P. Greene, William G. Howell, and Paul E. Peterson, "Lessons from the Cleveland Scholarship Program," in Peterson and Hassel, eds. *Learning from School Choice*, pp. 376-80.

Those who did change schools were asked to list their reasons why. Both groups offer reasons that are fairly evenly distributed across the variety of alternatives provided in the questionnaire. (Parents could give multiple reasons, so one should not add the percentages together). The most frequently mentioned reason concerns the quality of the school, a response given by 3 percent of the public-school parents and 2 percent of the private-school parents. Four percent of the public-school parents say the change in school was necessitated by a family move, but hardly any of the private-school parents gave this as a reason. Only one percent of the private school parents say that their child changed schools because of a suspension.

School mobility, it seems, was very low and virtually identical for both scholarship users and members of the control group. School expulsion or suspension was trivial factor, affecting less than one percent of both groups.

Plans for Next Year

Parents of students in private school are more likely to say they will attend the same school in the following year than are the parents of students in public school. More than 80 percent of the families using a scholarship expected their child to return to the same school, as compared to less than 60 percent of the control group (table 17). However, 17 percent of those moving from public school said it was because the child was graduating, as compared to 6 percent of the private-school parents. The difference is probably due to the fact that the transition from elementary to middle school requires a change of schools in the public sector but not in the private sector. Once an adjustment is made for differential graduation rates, the percentage of the public-school students planning on changing school is 25 percent, as compared to 12 percent of those in private

school. Although this is a sizable difference, it may be due to public-school parents participating in the evaluation who hoped they would receive a scholarship and therefore did not explore alternatives to their current public school.

If parents said they planned to switch schools over the summer of 1999, they were asked to give their reasons. (As before, parents could give multiple reasons, so the percentages cannot be added together.) The most frequently mentioned reason was the school's location, a response given by 5 percent of the private-school parents (Table 16). Three percent of all the private-school parents said they did not find the quality of the school acceptable. Another 3 percent said they were planning to move away from the school. The next most frequently mentioned reasons, given by no more than 2 percent of the private-school parents, were expense and a desire for all children in a family to attend the same school. Less than one percent of all scholarship users said they had been asked by their school "not to return."

A larger percentage of the families in the control group were planning to change schools next year. Twenty percent of all control-group families said they were planning on moving because the quality of their school was not acceptable. Another nine percent claimed they were planning on moving. Six percent said they wanted their children to attend the same school, and 5 percent said they were sending their child to a private school. None of the public-school parents said their child was changing school because their child had been asked not to return.

Test Scores

Several studies have compared the test-score performances of students in public and private schools, and they usually find that students in private schools outperform

their public-school peers. However, even the most careful of these studies, which adjust for observed family background characteristics, cannot be sure that they have taken into account an intangible factor — the willingness of a family to pay for their child's tuition, and all that this implies about the importance they place on education. As a result, it remains unclear whether the findings describe actual differences between public and private schools or simply differences in the kinds of students and families attending them.[38] In the jargon of the research community, this is called the self-selection problem, the problem that arises when a population differentiates itself by freely selecting a particular situation, in this case, a private school.

Until recently, studies of voucher programs have not randomly assigned students to treatment and control conditions, and therefore have not overcome possible selection problems. Privately-funded programs in Indianapolis, San Antonio, and Milwaukee admitted students on a first-come, first-served basis. And in the state-funded program in Cleveland, though scholarship winners were initially selected by means of a lottery, eventually all applicants were offered a scholarship, thereby precluding the possibility of conducting a randomized experiment. The public Milwaukee program did award vouchers by a lottery, but data collection was incomplete.[39] The highest quality data collected thus far come from the New York City and Washington D. C. voucher

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[38] Major studies finding positive educational benefits from attending private schools include James S. Coleman, Thomas Hoffer, and Sally Kilgore, *High School Achievement* (New York: Basic Books, 1982); John E. Chubb and Terry M. Moe, *Politics, Markets, and America's Schools* (Washington: Brookings 1990); Derek Neal, "The Effects of Catholic Secondary Schooling on Educational Achievement," (University of Chicago Harris School of Public Policy and National Bureau for Economic Research, 1996). Critiques of these studies have been prepared by Arthur S. Goldberger and Glen G. Cain, "The Causal Analysis of Cognitive Outcomes in the Coleman, Hoffer, and Kilgore Report," *Sociology of Education*, vol. 55 (April-July 1982), pp. 103-22; Douglas J. Wilms, "Catholic School Effects on Academic Achievement: New Evidence from the High School and Beyond Follow-up Study," *Sociology of Education*, vol. 58 (1985), pp. 98-114.

programs, which were evaluated as random field trials. These evaluations found, after one year, positive effects of attending a private school if students entered the private school in the elementary school years, but inconsistent effects for students entering private school in the middle-school grades, six to eight.[40]

The Dayton scholarship program provides another opportunity to estimate the impact of attending a private school for one year on student test scores in grades 2 through 8. To estimate more precisely the effects of attending a private school in Dayton on student test scores, baseline test scores in both reading and math were included in all equations.

Results differ, depending on whether the students were African American. Nearly 75 percent of the students participating in the Dayton evaluation for whom test score information is available were African American; 23 percent of the students were white, and 2 percent were of another ethnic background.

Test scores of black students attending private school were higher in both reading and math (Table 17). Math scores were 7 national percentile points higher than the scores of the members of the control group, and reading scores were 5 percentile points higher. The difference in math scores is statistically significant at the .05 level, with a p-value of .04; the difference in reading scores is not quite significant, with a p-value of .13.

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[39] Results from these evaluations are reported in Paul E. Peterson and Bryan C. Hassel, eds., *Learning from School Choice* (Brookings, 1998).

[40] New York results are reported in Peterson, Myers, Howell, and Mayer, 1998; Washington results are reported in Patrick Wolf, William Howell and Paul E. Peterson, "School Choice in Washington, D. C.: An Evaluation After One Year" Paper prepared for Conference on Vouchers, Charters and Public Schools, Program on Education Policy and Governance, Kennedy School of Government, Harvard University, March 2000.

The effect of attending a private school on math scores is .3 standard deviations; the effect on reading scores is 0.21 standard deviations, effects generally considered moderately large, especially if realized within one year. On many tests of student achievement, African Americans students tend to trail white students by one full standard deviation. To reduce this difference by a fifth to nearly a third in one year is taking a large step toward erasing what Christopher Jencks and Meredith Phillips have termed the black-white test score gap.[41] It remains to be seen whether these gains can be consolidated and enhanced in subsequent years.

No significant differences between the test scores of non-African American students in private and public schools were observed after one year in either reading or math.[42]

[41] Christopher Jencks and Meredith Phillips, eds., *The Black-White Test Score Gap* (Washington, D. C.: Brookings, 1999).

[42] Scores of students who either gained two standard deviations or lost one and one-half standard deviations between the baseline test and the first-year follow up were deleted from the analysis, because these changes were so dramatic they could well have been produced by peculiar test-taking conditions. When scores for these students were imputed, similar point estimates were obtained.

Table 1 – Educational Characteristics: Scholarship Takers and Decliners, Dayton, OH

	Takers	Decliners	Difference
	(1)	(2)	(3)
Baseline Test Scores:			
Reading	25.1	22.1	3.0
Math	24.9	29.0	-4.1*
Percent of children facing the following educational challenges:[1]			
Learning disability	8.2	10.2	-2.0
Does not understand English well	0.4	1.2	-0.8
Physical Disability	2.6	4.7	-2.1
(N)	233-239	255-257	

Grades 1-8 in 1998-99. Percentages are weighted. N is actual number of observations. * = difference significant at $p < .1$, ** = significant at $p < .05$, *** = significant at $p < .01$; two-tailed test.

[1] According to the 1999 survey.

Table 2 - Demographic Characteristics
Scholarship Takers and Decliners, Dayton, OH

	Takers	Decliners	Difference
	(1)	(2)	(3)
Family Income: [1]			
Less than $5,000	5.4	3.2	2.2
$5,000-$10,999	25.4	9.7	15.7***
$11,000-$24,999	41.5	54.9	-13.4***
$25,000-$39,999	24.6	25.8	-1.2
$40,000 or more	3.1	6.5	-3.4
Total	100.0	100.0	
Average family income	$17,681	$20,597	-$2916**
Families receiving following forms of government assistance			
Welfare	17.2	16.7	0.5
Social Security	4.1	7.0	-2.9
Mother's Education (highest achieved) [2]			
No high school diploma	6.5	13.4	-6.9***
High school diploma or GED	19.6	17.1	2.5
Less than 2 yrs post secondary	32.1	30.4	1.7
2+ yrs of trade, vocational or bus. school	6.5	6.6	-0.1
2 yrs or more college	15.8	26.0	-10.2***
College graduate (4 or 5 yr program) & up	19.6	6.1	13.5***
Total	100.0	100.0	
Average Number of Years of Education	13.6	13.2	0.5**
Mother's Employment Status			
Full time	46.6	55.2	-8.6*
Part time	17.7	16.3	1.4
Looking for work	17.2	14.3	2.9
Not looking	18.6	14.3	4.3
Total	100.0	100.0	
Child currently lives with . . . [3]			
Mother and father	22.9	29.0	-6.1
Mother only	75.6	66.1	9.4
Father only	22.9	32.3	-9.4
Grandparent	9.0	12.9	-3.7
Other	3.8	0.0	3.8
Total	100.0	100.0	

Table 2 Continued

	Takers	Decliners	Difference
	(1)	(2)	(3)
Percent of Mothers at Current Residence for 2 years or less	34.5	43.1	-8.6*
Mother's Ethnicity			
Black	66.7	72.9	-6.2
White	32.4	25.7	6.6
Other	1.0	1.4	-0.4
Total	100.0	100.0	
Mother's Religious Affiliation			
Baptist	30.2	44.0	-13.8***
Other Protestant	22.9	33.5	-10.6***
Catholic	18.5	2.5	16.0***
Other Religion	11.7	19.0	-7.3**
No Religion	11.7	6.5	5.2*
Prefer not to say	4.9	4.5	0.4
Total	100.0	100.0	
Mother Currently Married	23.8	25.6	-1.8
Average Number of Children in House	2.8	3.2	-0.4***
Percentage of Mothers US Born	94.1	100.0	-5.9***
(N)	146-239	157-257	

Grades 1-8 in 1998-99. Percentages are weighted. N is actual number of observations. * = difference significant at $p < .1$, ** = significant at $p < .05$, *** = significant at $p < .01$; two-tailed test. All figures are from survey at baseline (1998) unless otherwise indicated.

[1] Income information is from follow-up survey. Distribution of responses by taker vs. decliner generates a Chi-Squared sum of 19.2 which is statistically significant at $p < .05$ with 9 d.f.

[2] Distribution of responses by taker vs. decliner generates a Chi-Squared sum of 22.3, which is statistically significant at $p < .01$ with 8 d.f.

[3] According to 1999 survey.

Table 3 – School Selection, Dayton, OH

	Effect of Scholarship Offer			Effect of Going Private		
	Offer	No Offer	Impact	Private	Public	Impact
	(1)	(2)	(3)	(4)	(5)	(6)
Cited as one of three most important reasons why parent chose school:						
Academic quality	66.4	59.2	7.2	71.3	55.6	15.7**
Teacher quality	44.2	38.8	5.4	42.5	40.0	2.5
Discipline	37.0	22.5	14.5***	45.5	16.2	29.2***
School safety	32.9	25.8	7.1	28.2	29.3	-1.1
Religious instruction	30.8	12.2	18.6***	46.8	0.3	46.5***
Class size	24.6	15.4	9.2**	21.6	10.2	21.4***
What is taught in school	23.8	27.7	-3.9	21.8	29.2	-7.4
Special features of school	18.4	18.1	0.3	18.5	18.1	0.4
Convenient location	13.2	12.9	0.3	6.1	18.2	-12.1**
Neighborhood public school	8.0	7.9	0.1	0.8	13.3	-12.5***
Extra-curricular activities	4.7	3.8	0.9	2.1	5.8	-3.7
Only choice available	4.2	19.9	-15.7***	0.0	26.5	-31.2***
Child's friends	4.1	1.0	3.1	7.1	0.0	7.1***
School facilities	3.5	2.5	1.0	3.2	2.8	0.4
Sports program	1.9	1.6	0.3	0.0	3.1	-3.2
(N)	193	215				408

Grades 1-8. Percentages are weighted. N is actual number of observations. * = difference significant at $p < .1$, ** = significant at $p < .05$, *** = significant at $p < .01$; two-tailed tests conducted.

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Table 4 – Attending a Preferred School, Dayton, OH

	Effect of Scholarship Offer			Effect of Going Private		
	Offer	No Offer	Impact	Private	Public	Impact
	(1)	(2)	(3)	(4)	(5)	(6)
Percent who gained admission to a school the family wanted the child to attend:	84.0	49.7	34.3***	93.8	40.6	53.2***
Reasons why child did not gain admission to preferred school:[1]						
Cost of school	6.3	44.1	-37.8***	0.0	54.1	-58.7***
Transportation problems	2.0	1.6	0.4	2.1	1.5	0.5
No space available	2.0	3.9	1.9	1.5	4.4	-2.9
Applied too late	2.3	0.3	2.0	2.9	0.0	3.1
Child turned away	2.4	1.6	0.8	2.7	1.3	1.4
School in inconvenient location	0.4	0.3	0.1	0.3	0.3	0.0
Communication problems	0.9	0.3	0.6	1.1	0.1	0.9
Moved away from the school	0.5	0.7	-0.2	0.5	0.8	-0.3
Child did not pass admissions test	0.8	0.3	0.5	0.9	0.2	0.7
Family not a member of church affiliated with school	1.6	2.6	-1.0	1.2	2.9	-1.7
(N)	193	253				408

Grades 1-8. Percentages are weighted. N is actual number of observations. * = differences significant at $p < .1$, ** = significant at $p < .05$, *** = significant at $p < .01$; two-tailed test conducted.

[1] Percentages are based on all respondants in each category.

Table 5 – School Facilities and Programs, Dayton, OH

	Effect of Scholarship Offer			Effect of Going Private		
	Offer	No Offer	Impact	Private	Public	Impact
	(1)	(2)	(3)	(4)	(5)	(6)
Average school size	283.9	400.7	-116.9***	259.7	433.5	-173.7***
Average class size	21.9	24.0	-2.1***	21.3	24.6	-3.2***
Percent of children who have the following resources at their school:						
Music program	98.3	94.4	4.0**	99.5	93.4	6.1**
Library	97.6	99.0	-1.3	97.3	99.3	-2.1
Cafeteria	92.0	95.8	-3.8	91.0	96.8	-5.9
Arts program	87.8	89.4	-1.6	87.4	89.9	-2.5
Gym	87.7	97.6	-9.8***	84.8	100.0	-15.4***
Special education programs	83.0	87.3	-4.3	81.8	88.3	-6.5
After-school program	78.4	69.5	8.9*	80.9	66.9	14.0*
Computer lab	78.4	72.2	6.2	80.1	70.5	9.5
Nurse's office	77.0	93.7	-16.6***	72.3	97.7	-25.4***
Individual tutors	74.4	54.5	19.8***	79.3	48.0	31.3***
Child counselors	60.2	74.7	-14.5***	55.5	78.6	-23.0***
(N)	66-191	136-207				242-398

Grades 1-8 in 1998-99. Percentages are weighted. N is actual number of observations. * = difference significant at p < .1, ** = significant at p < .05, *** = significant at p < .01; two-tailed test conducted. When more than one third of respondents claimed they 'didn't know' whether a program existed at their child's school, the item was deleted.

Table 6 – Ethnic Considerations, Dayton, OH

	Effect of Scholarship Offer			Effect of Going Private		
	Offer	No Offer	Impact	Private	Public	Impact
	(1)	(2)	(3)	(4)	(5)	(6)
Percent of classmates that are minority:						
Less than 50 percent	47.4	33.6	13.8***	51.5	29.9	21.6***
About 50 percent	22.8	19.6	3.3	23.8	18.7	5.1
More than 50 percent	17.5	40.4	-22.9***	10.8	46.6	-35.9***
100 percent	12.2	6.4	5.8**	13.9	4.8	9.1**
Total	100.0	100.0		100.0	100.0	
Percent of classmates that are the same race as student:						
Less than 50 percent	22.6	28.5	-5.8	20.0	30.1	-9.1
About 50 percent	21.9	20.1	1.8	22.5	19.6	2.9
More than 50 percent	35.9	43.2	-7.3	33.8	45.2	-11.4
100 percent	19.5	8.2	11.2***	22.8	5.2	17.6***
Total	100.0	100.0		100.0	100.0	
Percent claiming that racial conflict is a serious problem at child's school[1]	18.7	28.0	-9.3**	15.6	30.4	-14.7*
(N)	150-192	186-213				336-405

Grades 1-8 in 1998-99. Percentages are weighted. N is actual number of observations. * = difference is significant at $p < .1$, ** = significant at $p < .05$, *** = significant at $p < .01$; two-tailed tests conducted.

[1] Respondents who said that their child's school contains only children of a single race are excluded from these percentages.

Table 7 – Special Needs, Dayton, OH

	Scholarship Offer			School Attended		
	Offer	No Offer	Impact	Private	Public	Impact
	(1)	(2)	(3)	(4)	(5)	(5)
Percent reporting that child has:						
A learning disability	18.3	10.5	NA	20.7	8.4	NA
Difficulty understanding English well	2.6	3.0	NA	2.5	3.1	NA
A physical disability	3.7	3.6	NA	3.7	3.5	NA
(N)	188-192	205-212				393-404
Percent claiming school is doing "very well" in meeting student's special need:[1]						
A learning disability	42.0	44.6	-2.6	39.7	47.5	-7.8
Difficulty understanding English well	100.0	84.4	15.6	100.0	84.4	24.8
A physical disability	16.9	25.0	-8.1	15.4	29.8	-14.4
(N)	4-43	6-18				10-61

Grades 1-8 in 1998-99. Percentages are weighted. N is actual number of observations. * = difference significant at p < .1, ** = significant at p < .05, *** = significant at p < .01; two-tailed tests conducted.

[1] Percentages expressed in terms of those students who have the relevant special need, not in terms of the total population.

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Table 8 – School Climate, Dayton, OH

	Effect of Scholarship Offer			Effect of Going Private		
	Offer	No Offer	Impact	Private	Public	Impact
	(1)	(2)	(3)	(4)	(5)	(6)
Parents who believe the following problems at school are serious:						
Tardiness	21.7	45.2	-23.5***	15.1	51.2	-36.1***
Fighting	24.4	57.6	-33.2***	16.0	65.8	-49.8***
Truancy	17.1	39.1	-22.0***	10.9	44.9	-34.1***
Cheating	14.7	37.0	-22.3***	8.8	42.6	-33.8***
Destruction of property	14.5	35.7	-21.2***	8.3	41.4	-33.1***
Parents reporting the following rules at their child's school:						
Dress Code	98.2	92.7	5.5**	99.8	91.4	8.4**
Visitors must sign in	89.7	95.2	-5.6**	88.0	96.7	-8.7**
Uniforms	80.0	57.9	22.2***	86.4	52.6	33.8***
Hall Passes	64.2	74.4	-10.3**	60.5	77.2	-16.7**
(N)	157-191	176-207				333-396

Grades 1-8 in 1998-99. Percentages are weighted. N is actual number of observations. * = difference significant at p < .1, ** = significant at p < .05, *** = significant at p < .01; two-tailed tests conducted.

Table 9 – School Expectations and Homework, Dayton, OH

	Effect of Scholarship Offer			Effect of Going Private		
	Offer	No Offer	Impact	Private	Public	Impact
	(1)	(2)	(3)	(4)	(5)	(6)
PARENTAL REPORTS						
Minutes of homework each day:	0.94	0.96	-0.02	0.93	0.97	-0.04
Percent strongly agree that child's school has high academic expectations:	34.9	20.7	14.2***	39.0	17.0	22.0***
Difficulty of homework:						
Too easy	6.9	15.9	-9.0***	4.3	18.3	-14.0***
Appropriate	88.2	72.5	15.7***	92.8	68.3	24.4***
Too difficult	2.5	6.1	-3.6*	1.4	7.0	-5.6*
Don't know	2.4	5.5	-3.1	1.6	6.4	-4.8
Total	100.0	100.0		100.0	100.0	
(N)	193	210-215				403-408
STUDENT REPORTS						
Average number of hours of homework assigned each day:	1.07	1.06	0.01	1.08	1.06	0.02
Percent of students who agree w/ following:						
"I would read much better if I had more help"	26.3	26.1	-0.2	26.3	26.0	0.3
"Class work was hard to learn"	26.2	18.0	8.2	28.4	15.6	12.8
"I had trouble keeping up with the homework"	30.3	23.6	6.7	32.4	21.6	10.8
(N)	118-122	125-128				243-250

Grades 1-8 in 1998-99. Percentages are weighted. N is actual number of observations. * = difference significant at $p < .1$, ** = significant at $p < .05$, *** = significant at $p < .01$; two-tailed test conducted.

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Table 10 – Parent-School Communications, Dayton, OH

	Effect of Scholarship Offer			Effect of Going Private		
	Offer	No Offer	Impact	Private	Public	Impact
	(1)	(2)	(3)	(4)	(5)	(6)
Percent for whom following practices exist at child's school:						
Parent open-houses held at school	96.1	94.9	1.2	96.5	94.6	1.9
Regular parent/teacher conferences held	96.2	90.1	6.1**	98.0	88.4	9.5**
Parents receive notes from teachers	90.4	79.2	11.2***	91.7	76.2	17.5***
Parents informed of midterm progress	94.3	94.5	-0.2	94.2	94.6	-0.4
Parents receive newsletter about school	91.6	77.5	14.1***	95.7	73.7	21.9***
Parents notified when child sent to office for first time because of disruptive behavior	87.6	75.9	11.7***	91.3	72.7	18.5***
Parents participate in instruction	66.1	46.4	19.8***	71.8	41.9	29.9***
Parents speak to classes about their jobs	51.6	42.4	9.2	55.0	39.9	15.1
Frequency discuss school matters with other parents:						
Seldom or never	39.3	32.7	6.7	41.3	30.9	10.4
Once or twice a month	35.8	38.9	-3.0	35.0	39.7	-4.7
Once or twice a week	21.8	16.8	4.9	23.2	15.5	7.7
Almost everyday	3.0	11.6	-8.6***	0.5	13.9	-13.4***
Total [1]	100.0	100.0		100.0	100.0	
Average number of parent-teacher meetings attended in the past year	2.2	2.1	-0.1	2.1	2.3	-0.2
Hours volunteered/month	1.2	1.0	-0.2	1.0	1.2	-0.2
Percent part of PTA/parent organization	18.6	17.9	-0.7	17.6	18.8	-1.2
(N)	131-191	163-215				294-405

Grades 1-8 in 1998-99. Percentages are weighted. N is actual number of observations. * = difference significant at p < .1, ** = significant at p < .05, *** = significant at p < .01; two-tailed test conducted.

[1] Distribution of unweighted responses is different between those offered and not offered a scholarship, based on a chi-squared sum of 9.9 with 3 degrees of freedom that is statistically significant at p < .05.

Table 11 -- Parental Involvement with Child's Education, Dayton, OH

	Effect of Scholarship Offer			Effect of Going Private		
	Offer	No Offer	Impact	Private	Public	Impact
	(1)	(2)	(3)	(4)	(5)	(6)
Percent of parents who frequently participate in the following activities with their child(ren): [1]						
Discuss experiences at school	72.5	72.9	-0.4	72.3	73.0	-0.7
Work on homework	52.0	53.9	-1.9	51.5	54.5	-3.0
Helped with math/reading not related to homework	37.2	36.4	0.8	37.4	36.2	1.2
Worked on a school project	14.1	19.3	-5.2	12.7	20.7	-8.0
Attended school activities w/ child	13.7	13.9	-0.2	13.6	14.0	-0.4
(N)	193	215				408

Grades 1-8 in 1998-99. Percentages are weighted. N is actual number of observations. * = difference significant at $p < .1$, ** = significant at $p < .05$, *** = significant at $p < .01$; two-tailed tests conducted.

[1] "Frequently" was operationally defined as 6 or more times per month.

Table 12 – Religious Considerations, Dayton, OH

	Effect of Scholarship Offer			Effect of Going Private		
	Offer	No Offer	Impact	Private	Public	Impact
	(1)	(2)	(3)	(4)	(5)	(6)
Percent listing religious instruction as one of three most imp. factors in choice of school	30.8	12.2	18.6***	36.0	7.3	28.9***
Percent who prefer that child attend a religious school	94.4	94.7	-0.3	94.4	94.9	-0.5
Among those who prefer that child attend a religious school, most important reason why:						
Greater discipline	25.4	12.3	13.1***	27.5	8.5	19.0***
Daily religious instruction	18.7	30.9	-12.2***	16.7	34.5	-17.8**
Higher academic standards	50.1	52.5	2.4	49.7	53.2	-3.5
School safety	2.5	2.4	0.1	2.4	2.4	0.0
Other reason	3.4	1.8	-1.6	3.6	1.4	2.2
Total	100.0	100.0		100.0	100.0	
Percent of children denied admission to a preferred school for religious reasons	1.6	2.6	-1.0	1.2	2.9	-1.7
Frequency of mother's attendance at religious services: [1]						
More than once a week	21.5	30.9	-9.3**	18.8	33.4	-14.6**
Once a week	35.9	30.9	4.9	37.3	29.6	7.7
Once a month	20.2	21.3	-1.1	19.9	21.6	-1.7
Only on major holidays	11.6	11.5	0.1	11.6	11.5	0.1
Never	10.8	5.4	5.4**	12.4	8.5	4.0*
Total	100.0	100.0		100.0	100.0	
Percent of parents satisfied with the religious dimension of their child's school	34.5	11.9	22.6***	40.3	5.7	34.6***
(N)	151-193	172-215				273-397
Percent of students who attended religious services in the past year:	62.4	43.0	19.4***	68.3	37.5	30.8***
Percent of students who receive religious instruction outside of school:	17.6	13.9	3.7	18.7	12.9	5.8
(N)	124	131				255

Weighted percentages and actual number of observations reported for parents with children in grades 1-8 and student responses for grades 4-8. * = difference significant at $p < .1$, ** = significant at $p < .05$, *** = significant at $p < .01$; two-tailed tests conducted.

[1] Distribution of responses is not significantly different between those offered and those not offered a scholarship at $p < .10$ based on a Chi-Squared sum of 5.5 with 4 d.f.

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Table 13A – Parental Satisfaction, All Public School Parents and Private and Public School Parents Participating in Evaluation, Dayton, OH

	Private School Parents Participating in Study	Dayton Public School Parents	Public School Parents Participating in Study
	(1)	(2)	(3)
Percent of parents 'very satisfied' with:			
Academic Program	51%	19%	9%
Safety	46%	16%	12%
Parental Involvement	40%	20%	11%
Class Size	37%	11%	9%
Percent of parents giving their school an 'A':	47%	25%	8%

Table 13B – Parental Satisfaction with School, Study Participants Only

	Effect of Scholarship Offer			Effect of Going Private		
	Offer	No Offer	Impact	Private	Public	Impact
	(1)	(2)	(3)	(4)	(5)	(6)
Percent of parents 'very satisfied' with:						
Teacher Skills	47.2	16.4	30.8***	55.3	8.3	47.0***
Student respect for Teachers	44.9	15.6	29.3***	52.5	7.6	44.9***
What is Taught	44.3	15.6	28.7***	52.4	7.6	44.8***
Academic Program	43.9	16.3	27.6***	51.3	8.8	42.6***
Teacher respect for students	42.0	16.2	25.7***	49.0	9.3	39.7***
Moral Values	41.9	19.1	22.7***	47.7	12.9	34.7***
Safety	39.6	18.3	21.3***	45.6	12.5	33.1***
Teacher-Parent Relations	39.8	19.4	20.4***	45.7	13.8	31.9***
School Discipline	38.4	16.7	21.6***	44.2	10.8	33.4***
Location	36.5	33.9	2.6	37.2	33.2	4.1
Teamwork among school staff	35.8	17.3	18.6***	40.4	12.2	28.2***
Parental Involvement	35.1	16.3	18.9***	39.9	11.1	28.8***
Freedom to observe religious traditions	34.5	11.9	22.6***	40.3	5.7	34.6***
Clarity of school goals	34.3	16.2	18.1***	38.9	11.1	27.8***
Class Size	31.9	14.0	17.9***	36.7	9.0	27.7***
School Facility	28.5	11.6	17.0	33.3	6.7	26.6***
Overall Grade parent give school:[2]						
A	40.0	14.8	25.2***	47.3	7.9	39.4***
B	42.9	33.6	9.3*	45.6	31.1	14.5*
C	11.2	34.6	-23.3***	4.5	41.0	-36.5***
D	4.5	12.9	-8.4***	2.1	15.2	-13.1***
F	1.3	4.0	-2.7	0.5	4.3	4.8
Total	100.0	100.0		100.0	100.0	
Average grade parents give school	B	C+		B+	C+	
(N)	184-189	203-210				392-408

Grades 1-8 in 1998-99. Percentages are weighted. N is actual number of observations. * = difference significant at p < .1, ** = significant at p < .05, *** = significant at p < .01; two-tailed tests conducted.

[2] Distribution of responses between those offered and not offered a scholarship is significantly different at p = .01 based on a Chi-Squared sum of 54.9 with 4 d.f..

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Table 14 – Student Adjustment and Satisfaction, Dayton, OH

	Effect of Scholarship Offer			Effect of Going Private		
	Offer	No Offer	Impact	Private	Public	Impact
	(1)	(2)	(3)	(4)	(5)	(6)
Student friendship patterns:						
Percent of students with eight or more close friends at school	42.9	57.5	-14.6**	38.2	62.2	-24.0**
Percent of students whose parents know eight or more of their close friends	13.2	16.0	-2.8	12.3	16.9	-4.6
Percent with eight or more friends who get into trouble with teachers, use bad language or smoke cigarettes	8.1	11.2	-3.1	7.2	12.2	-5.0
Percentage of students who agree with the following statements:						
"Every time I try to get ahead, something stops me"	29.4	34.3	-4.8	27.9	35.6	-8.0
"To do well, good luck is more important than hard work"	11.0	18.1	-7.1	8.7	20.5	-11.8
"I feel I do not have much to be proud of"	13.1	18.2	-5.1	11.4	19.9	-8.5
"When I make plans, I am almost certain I can make them work"	81.6	74.1	7.6	84.1	71.5	12.6
Students' academic assessments:						
Average grade given school:	B+	B	**	B+	B-	**
"I like my school a lot"	26.0	29.5	-3.5	24.9	30.6	-5.6
"Teachers really listen to what I have to say"	83.3	71.2	12.2***	87.1	67.2	19.9**
"I do not feel safe at school"	16.1	26.0	-9.9*	7.1	29.3	-16.3*
"There is a lot of cheating in school"	27.2	36.8	-9.6	24.2	40.0	-15.8
"Students get along well with my teachers"	61.5	58.1	3.3	62.5	57.1	5.4
"Rules for behavior at my school are strict"	69.6	65.7	3.8	70.8	64.4	6.4
(N)	118-127	133-142				253-268

Students in grades 4-8. Weighted percentages and actual number of observations * = difference significant at $p < .1$, ** = significant at $p < .05$, *** = significant at $p < .01$; two-tailed tests conducted.

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Table 15 – Students Changing Schools During the Year, Dayton, OH

	Effect of Scholarship Offer			Effect of Going Private		
	Offer	No Offer	Impact	Private	Public	Impact
	(1)	(2)	(3)	(4)	(5)	(6)
Percent of students suspended during the year for disciplinary reasons:	13.3	12.5	0.8	13.5	12.3	1.2
Percent of students who changed schools during the school year:	8.0	6.8	1.1	8.3	6.5	-1.8
Reasons why child switched school during the year:[1]						
Quality of school unacceptable	1.8	2.9	-1.1	2.4	3.3	-1.9
Child was suspended or expelled	0.8	0.0	0.8	1.1	0.0	1.3
Moved away from school	0.6	3.6	-2.0*	0.0	4.5	-4.8*
Child admitted to preferred private school	0.0	0.0	0.0	0.0	0.0	0.0
Child admitted to preferred public school	0.0	1.7	-1.7	0.0	2.1	-2.6
School too expensive	0.0	0.0	0.0	0.0	0.0	0.0
School in inconvenient location	0.0	0.0	0.0	0.0	0.0	0.0
(N)	176-192	199-214				375-406

Grades 1-8 in 1998-99. Percentages are weighted. N is actual number of observations. * = difference significant at $p < .1$, ** = significant at $p < .05$, *** = significant at $p < .01$; two-tailed tests conducted.

[1] Percentages are in terms of the total population.

Table 16 – Students Planning to Change Schools Next Year, Dayton, OH

	Effect of Scholarship Offer			Effect of Going Private		
	Offer	No Offer	Impact	Private	Public	Impact
	(1)	(2)	(3)	(4)	(5)	(6)
Percent of students who plan to change schools next year:	23.4	38.0	-14.6	19.3	41.9	-22.6***
Reasons for the change:[1]						
Child is graduating	7.5	14.8	-7.2**	6.3	16.7	-10.5**
Quality of school unacceptable	4.6	16.9	-12.3***	2.5	20.3	-17.8***
Child admitted to preferred private school	0.8	4.1	-3.3*	0.3	4.9	-4.6*
Moving away from school	3.3	7.8	-4.5*	2.5	8.9	-6.4*
School in inconvenient location	4.9	2.5	2.4	5.3	1.8	3.5
Prefer that all my children attend the same school	2.5	5.0	-2.5	2.1	5.6	-3.6
School too expensive	0.0	0.5	-0.5	0.1	0.6	0.7
Child admitted to preferred public school	0.5	1.1	-0.6	0.4	1.2	-0.8
Child was asked not to return	0.4	0.0	0.4	0.5	0.0	0.5
(N)	143-186	139-211				282-397

Grades 1-8 in 1998-99. Percentages are weighted. N is actual number of observations. * = difference significant at $p < .1$, ** = significant at $p < .05$, *** = significant at $p < .01$; two-tailed tests conducted.

[1] Percentages are in terms of the total population.

Table 17 –Program's Impact on Student Test Scores, Dayton, OH

	Impact of Offer	Impact of Private-School Attendance
	(1)	(2)
Math		
African Americans	3.98**	6.79**
Non-African Americans	-4.98	-7.29
(N)	87-250	87-250
Reading		
African Americans	2.98	4.66
Non-African Americans	-0.61	-0.90
(N)	87-251	87-251

Difference between test and control groups in National Percentile Points on Iowa Test of Basic Skills. Weighted estimates reported. N = actual number of observations. Observations excluded if scores either fell by more than 1 ½ standard deviations or increased by more than 2 standard deviations from baseline to first-year follow-up. Statistical controls included for baseline math and reading scores. For complete results from these equations, see Appendix. * = difference significant at $p < .1$, ** = significant at $p < .05$, *** = significant at $p < .01$; two-tailed tests conducted.

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APPENDIX

The Appendix has three parts: 1) a discussion of the procedures for adjusting weights; 2) tables of characteristics for those who did and did not attend the follow-up testing sessions and results of logit models used to estimate weights; and 3) full results from equations estimating impacts on test scores.

Construction of Weights

To adjust for differential participation rates in the follow-up sessions, weights were generated for parents and students in the treatment and control groups. Because those invited to participate in the follow-up study had provided information at baseline, it was possible to use information from the baseline survey to calculate the probability that each participant in the baseline survey would attend a follow-up session. As Table A1 shows, the background characteristics of both treatment and control-group parents who came in for testing one year into the program differed slightly from those who did not attend; because these differences are quite small, however, the weights do not significantly alter any of the findings presented in this report. For the most part, the background characteristics that predict participation in the follow-up survey are similar for the treatment and control groups.

To construct weights that adjust for differential participation rates in follow-up sessions, we ran two logit models, one for the control group, the other for the treatment group. The results are reported in Table A2. The dependent variable was scored one if the child attended the year-one follow-up session, and zero otherwise. The covariates included all of the demographic and test score information listed in Table A1. When baseline information was missing, means were imputed. The pseudo-R2 and goodness of fit values suggest that the model does a reasonable job of predicting variance in the dependent variable.

The models generate a set of predicted values. These values represent the probability that each individual, given their baseline characteristics, would attend the year-one follow-up session. The weights are the inverse of these predicted values. The range of the weights was then capped so that the highest score was four times the value of the minimum weight. (This restriction affected only a handful of observations).

Table A1: Participation in Follow-Up Sessions, Summary Statistics

Individuals in Control Group who Attended the Follow-Up Session

Variable	Mean	Standard Deviation	Observations
Catholic	0.10	0.30	244
Family Size	3.01	1.15	244
Employment Status	0.65	0.41	244
Marital Status	0.26	0.44	244
Mother's Education	5.36	1.50	244
Welfare	0.14	0.35	244
Learning Disability	0.03	0.18	244
Disciplinary Problems	0.08	0.26	244
Black	0.57	0.50	244
Math Test Scores	24.63	25.26	244

Individuals in Control Group who Did Not Attend the Follow-Up Session

Variable	Mean	Standard Deviation	Observations
Catholic	0.26	0.44	613
Family Size	2.88	1.28	613
Employment Status	0.66	0.43	613
Marital Status	0.34	0.47	613
Mother's Education	5.64	1.51	613
Welfare	0.09	0.29	613
Learning Disability	0.07	0.25	613
Disciplinary Problems	0.04	0.19	613
Black	0.36	0.48	613
Math Test Scores	31.91	29.73	613

Individuals in Treatment Group who Attended Follow-Up Session

Variable	Mean	Standard Deviation	Observations
Catholic	0.10	0.30	208
Family Size	3.01	1.45	208
Employment Status	0.66	0.44	208
Marital Status	0.21	0.41	208
Mother's Education	5.67	1.61	208
Welfare	0.14	0.35	208
Learning Disability	0.12	0.32	208
Disciplinary Problems	0.11	0.31	208
Black	0.63	0.49	208
Math Test Scores	23.82	25.58	208

Individuals in Treatment Group who Did Not Attend the Follow-Up Session

Variable	Mean	Standard Deviation	Observations
Catholic	0.21	0.41	372
Family Size	2.89	1.34	372
Employment Status	0.69	0.42	372
Marital Status	0.34	0.47	372
Mother's Education	5.65	1.67	372
Welfare	0.12	0.33	372
Learning Disability	0.06	0.24	372
Disciplinary Problems	0.05	0.21	372
Black	0.44	0.50	372
Math Test Scores	29.62	29.09	372

TABLE A2

Logit estimates for the control group

Number of obs	= 866
LR chi2(10)	= 75.76
Prob > chi2	= 0.0000
Log likelihood = -479.82709	Pseudo R2 = 0.0732

y1	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
cath	-.8010902	.245463	-3.264	0.001	-1.282189	-.3199915
famsiz	.1725402	.067597	2.552	0.011	.0400525	.3050278
work	-.0566358	.2067514	-0.274	0.784	-.461861	.3485894
marry	-.2572452	.1942856	-1.324	0.185	-.638038	.1235476
edmoth	-.1236142	.0546605	-2.261	0.024	-.2307467	-.0164816
welfare	.2390307	.2626258	0.910	0.363	-.2757064	.7537679
lrndis	-.9868537	.4089686	-2.413	0.016	-1.788417	-.1852899
discip	.6914972	.3395933	2.036	0.042	.0259065	1.357088
black	.617861	.1726377	3.579	0.000	.2794973	.9562247
math	-.0072692	.0030263	-2.402	0.016	-.0132007	-.0013378
_cons	-.6046107	.3822554	-1.582	0.114	-1.353818	.1445961

Logistic model for y1, goodness-of-fit test

number of observations =	866
number of covariate patterns =	735
Pearson chi2(724) =	758.92
Prob > chi2 =	0.1786

Logit Estimates for Those Offered Scholarship

Number of obs	= 580
LR chi2(10)	= 50.83
Prob > chi2	= 0.0000
Log likelihood = -353.1057	Pseudo R2 = 0.0671

y1	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
cath	-.5068406	.2789887	-1.817	0.069	-1.053648	.0399672
famsiz	.1741474	.0693376	2.512	0.012	.0382482	.3100465
work	-.555403	.2433082	-2.283	0.022	-1.032278	-.0785278
marry	-.5847557	.2253825	-2.595	0.009	-1.026497	-.1430141
edmoth	.0266263	.0584259	0.456	0.649	-.0878864	.141139
welfare	-.3018529	.2867152	-1.053	0.292	-.8638044	.2600986
lrndis	.6664974	.3225236	2.067	0.039	.0343627	1.298632
discip	.6956508	.346881	2.005	0.045	.0157766	1.375525
black	.834667	.2085521	4.002	0.000	.4259124	1.243422
math	-.001746	.0035286	-0.495	0.621	-.008662	.00517
_cons	-1.106079	.4592413	-2.408	0.016	-2.006176	-.2059829

Logistic model for y1, goodness-of-fit test

number of observations =	580
number of covariate patterns =	520
Pearson chi2(509) =	535.37
Prob > chi2 =	0.2023

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Table A3: Test Score Findings

Impact of Being Offered a Scholarship

	READING				MATH			
	Blacks		Non-Blacks		Blacks		Non-Blacks	
Offered Scholarship	**2.98**	**[.1**	**-0.61**	**[.85**	**3.98****	**[.03]**	**-4.98**	**[.22]**
Baseline Test Scores								
Math	0.08*	[.0	0.21***	[.00	0.66***	[.00]	0.75***	[.00]
Reading	0.67***	[.0	0.68***	[.00	0.20***	[.00]	0.08	[.27]
Constant	11.39***	[.0	8.59***	[.01	6.80***	[.00]	12.67***	[.00]
Adjusted R^2	.60		.76		.58		.66	
N	251		87		250		87	

Weighted OLS performed. * significant at .1 level, two-tailed test conducted; ** significant at .05 level; *** significant at .01 level. P-values reported in brackets. Students in grades 2-8 included. Individuals whose scores either fell by more than 1 ½ standard deviations or increased by more than 2 standard deviations from baseline to year one were dropped.

Impact of Attending a Private School

	READING				MATH			
	Blacks		Non-Blacks		Blacks		Non-Blacks	
Attend Private School	**4.66**	**[.13]**	**-0.90**	**[.85]**	**6.79****	**[.04]**	**-7.29**	**[.23]**
Baseline Test Scores								
Math	0.09*	[.06]	0.21***	[.00]	0.67***	[.00]	0.74***	[.00]
Reading	0.68***	[.00]	0.67***	[.00]	0.20***	[.00]	0.07	[.34]
Constant	10.68***	[.00]	8.89**	[.03]	5.58***	[.01]	15.06***	[.00]
Adjusted R^2	.59		.76		.56		.65	
N	251		87		250		87	

Weighted OLS performed. * significant at .1 level, two-tailed test conducted; ** significant at .05 level; ***

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